
A340
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Evolution of Future Aircraft Data Communication

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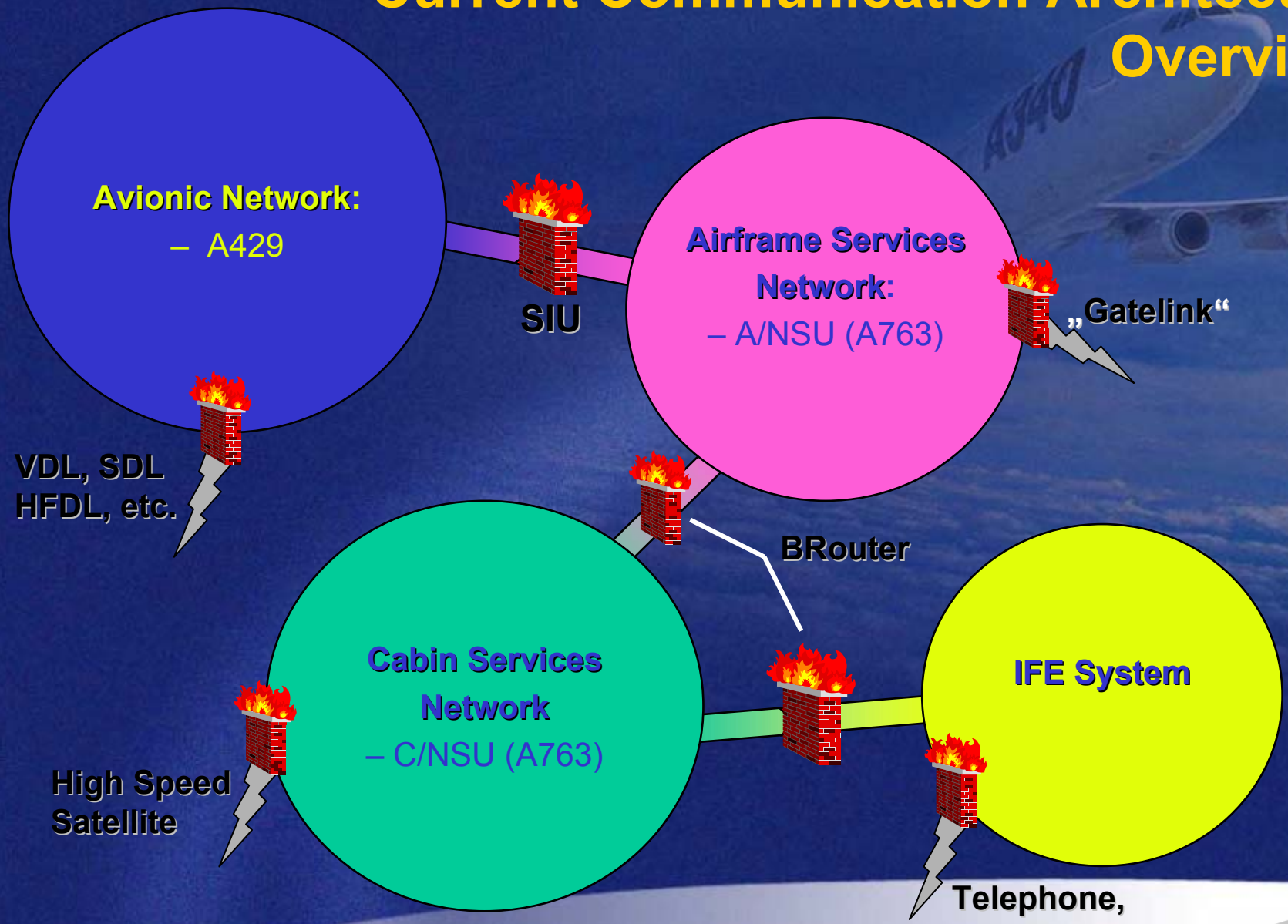
Introduction

Current Communication Architecture
- Overview
- Example: A340 – 500/600
- Services Evolution

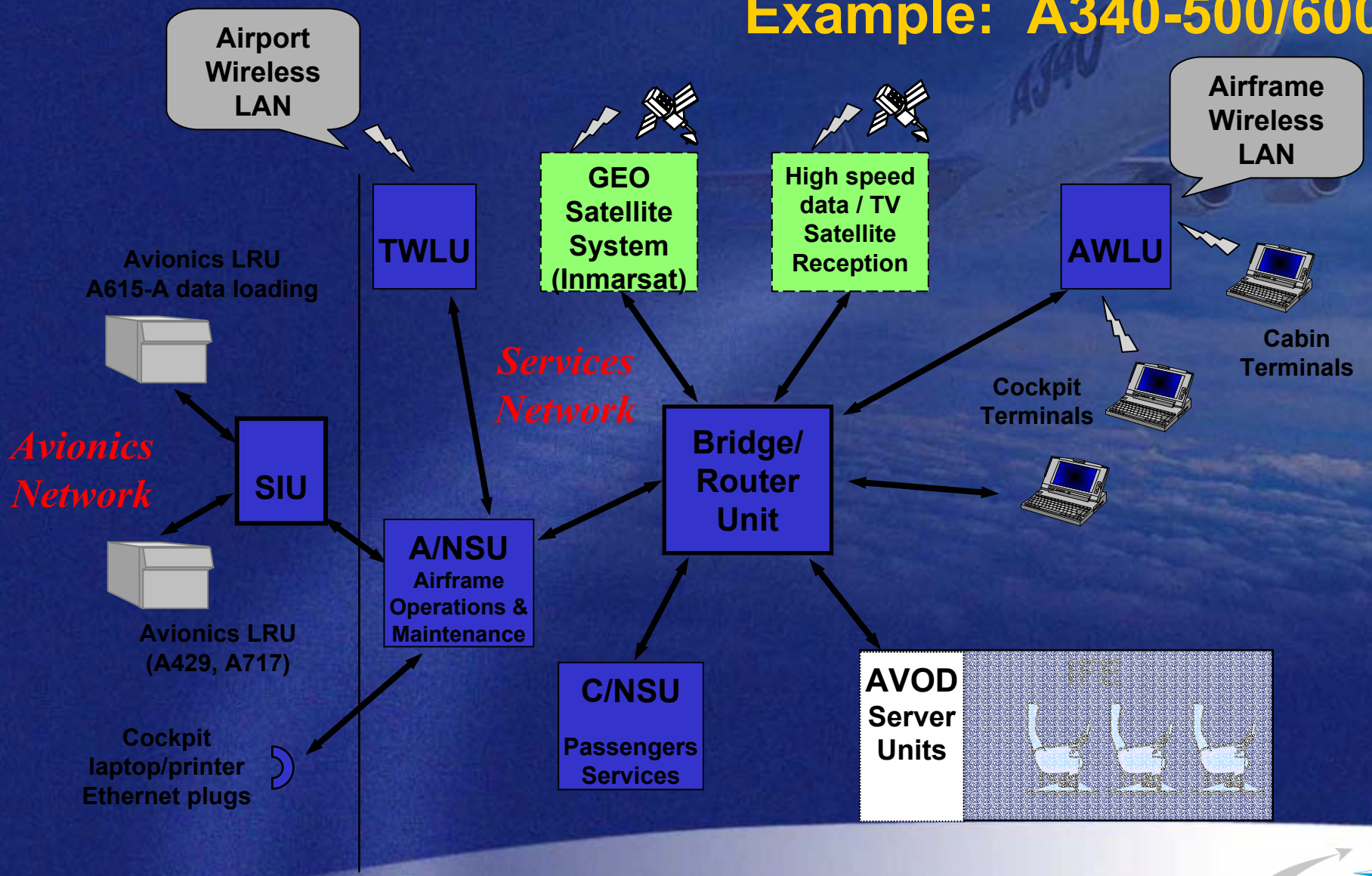
Future Communication Architecture
- Overview
- Example: A380
- Additional Services

Communication Technologies
- Overview
- Research Needs

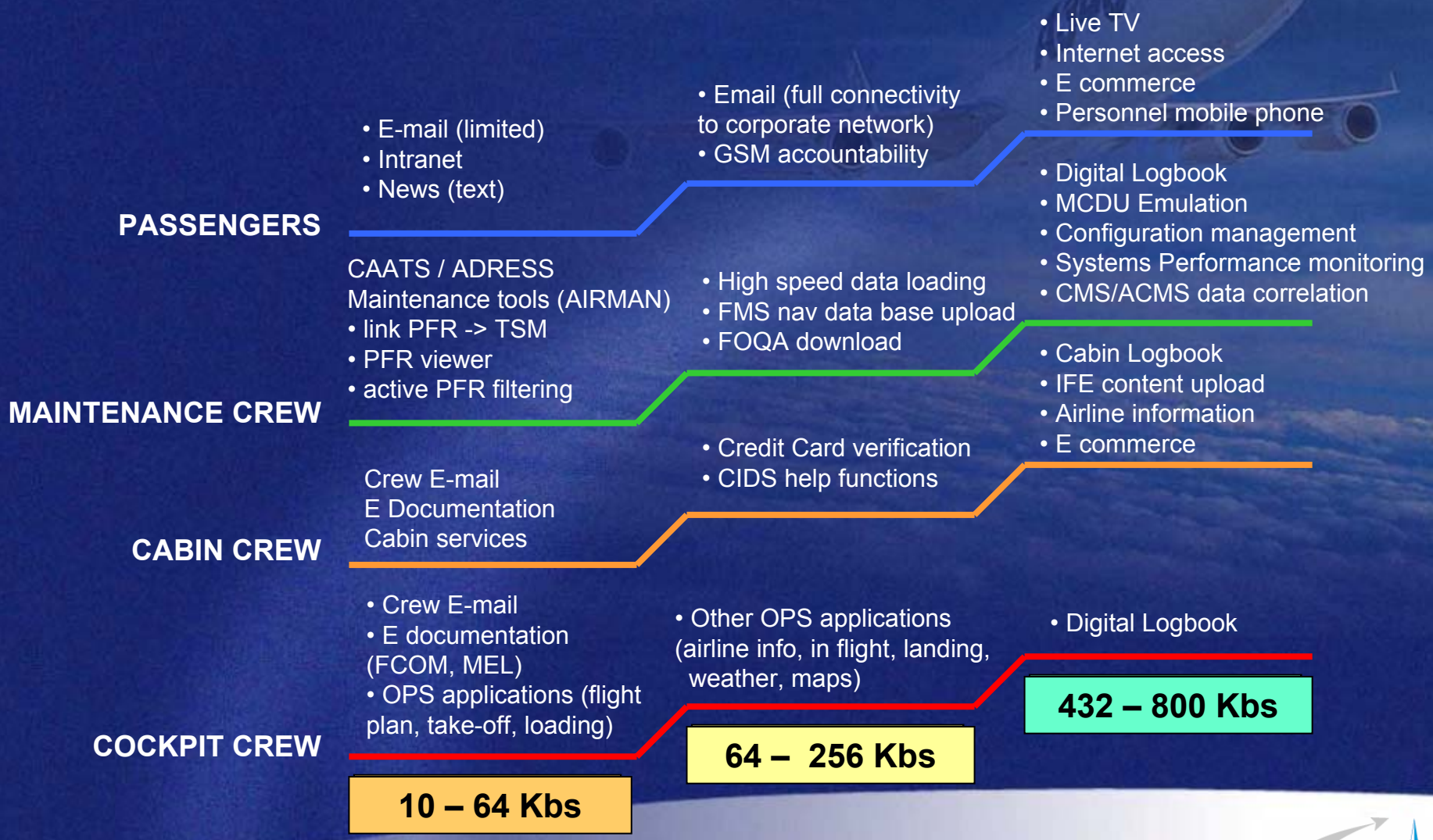
Current Communication Architecure Overview



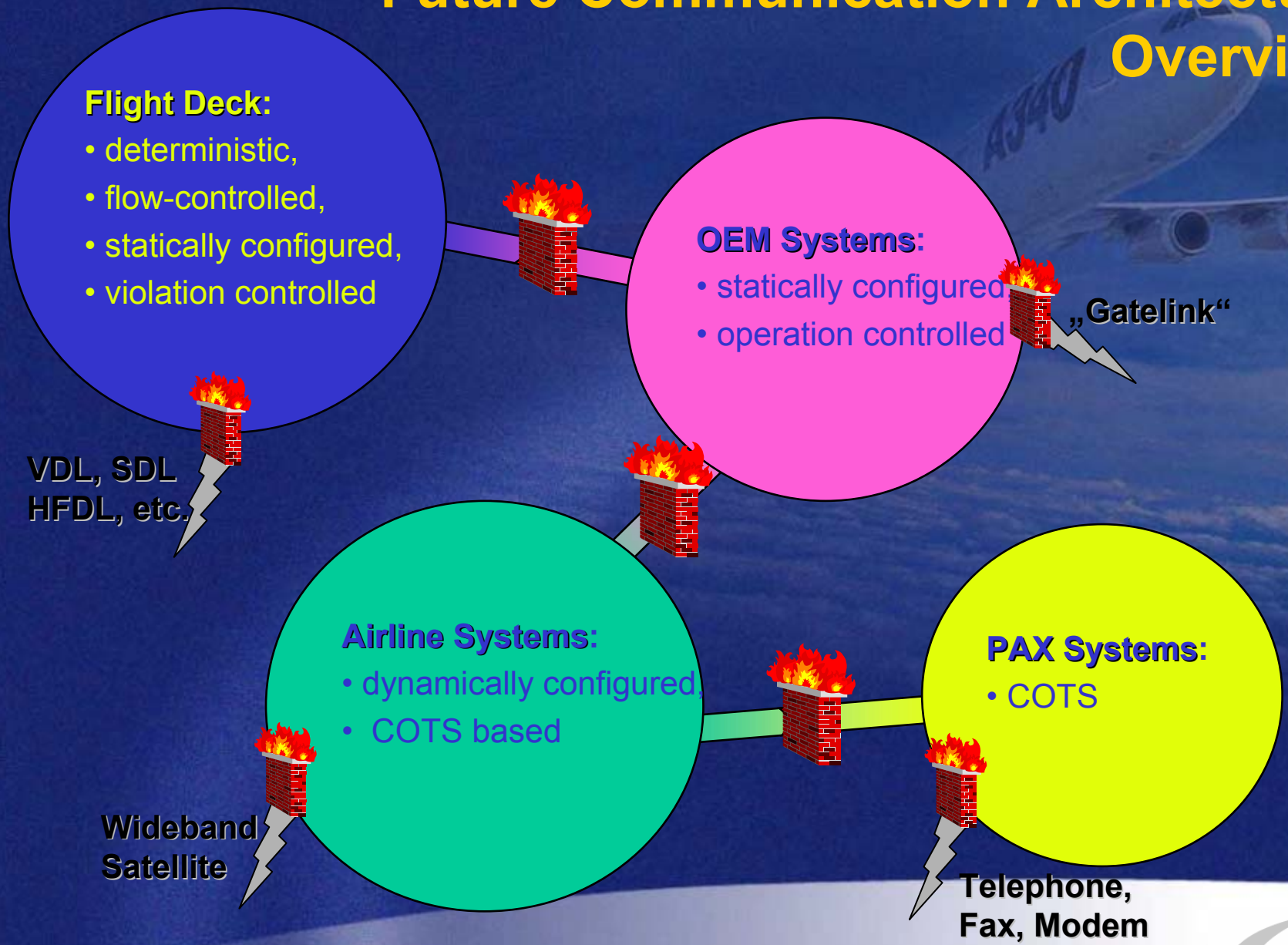
Current Communication Architecure Example: A340-500/600



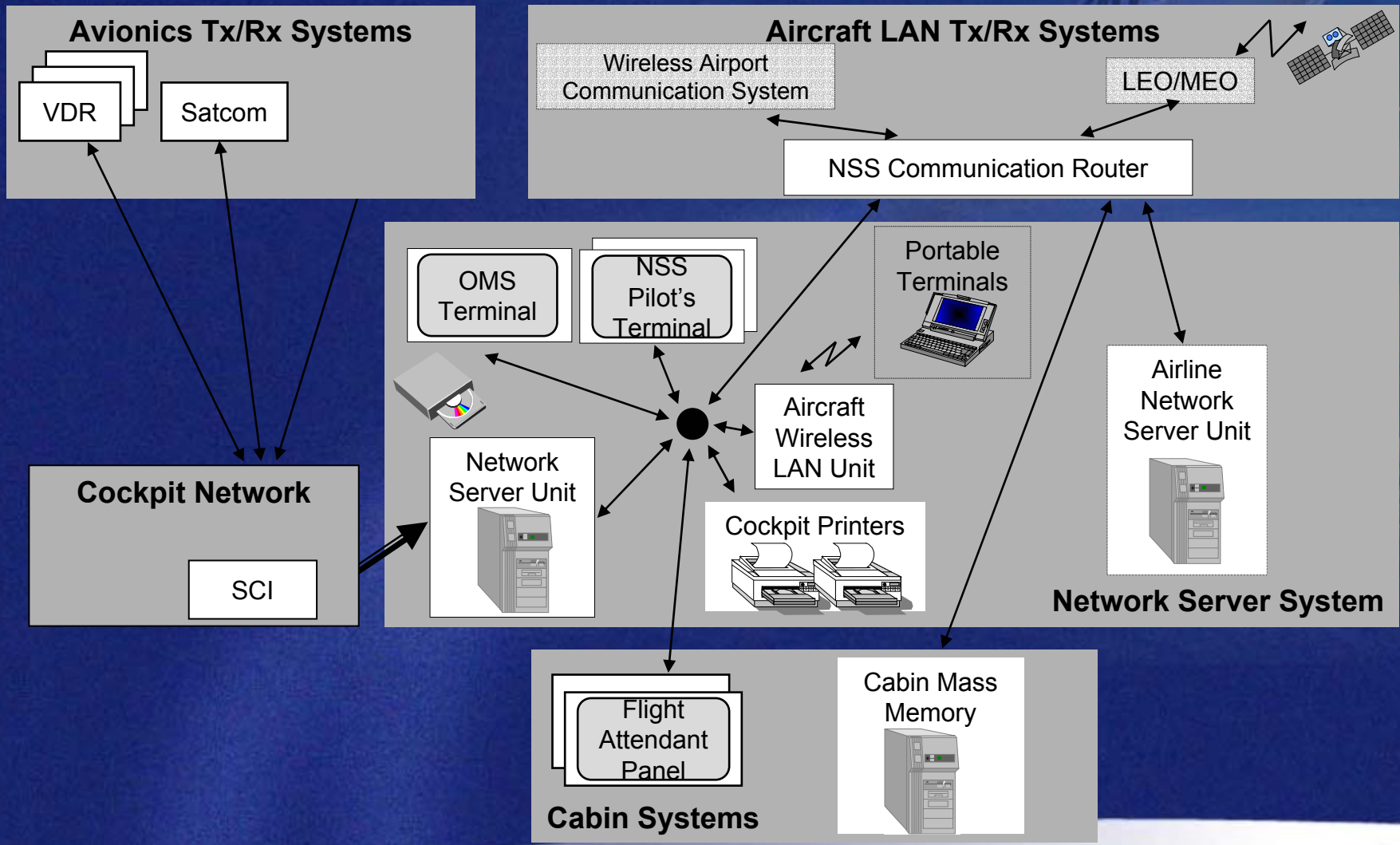
Current Communication Architecure Services Evolution



Future Communication Architecture Overview



Future Communication Architecture Example: A380



Future Communication Architecure
Additional Services

ATC en-route, TMA, Tower

ATC Strategic

Clearances
(DC, Taxi, Take-off, SID/route/STAR, App, Ldg, Oceanic, ...)
4D **Constraints**

Request
Negotiation
Acknowledgement
Readback
Position Report. (ADS)

ATC tactical

Instructions
(Hdg, Speed, Alt, Frequency, Taxi, ...)
Traffic **Information**
Alerts

Acknowledgement
Emergency
Safety

AOC/AAC e.g.

Perfo. Factors
Flight plan
Slot data

Weather Info
Info request
Reports

Airline Operations

Flight Information

ATIS
NOTAM
Wind/Temp
TAF/METAR

Surf Obs
Wind aloft
PIREPs

MET/AIS center

Communication Technologies Overview

Current Communication Protocols:

- ACARS
- Early ATN Implementations

Future Communication Protocols:

- Full ATN (OSI-Based)
- TCP/IP (Internet-Based)

Current Communication Media:

- VHF, HF and Satcom (Inmarsat-Based)

Future Communication Media:

- Satellites, various Frequencies and Bandwidth

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Communication Technologies Research Needs

Future Communication Protocols:

- Optimize TCP/IP for Aeronautical Needs

Current Communication Media:

- Enhance VHF, HF for higher Bandwidth

Future Satellites:

- Global Airline Networks Need Global Coverage
- Advanced Applications Need Very High Bandwidth
- Short Time-to-Market Need Robust Int'l Standards

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